[0074] PCB**1** and PCB**2** denote respective first and second printed circuit boards provided in the shelf device **20**. During use, an electric multi-mode power converter module **10** is inserted in the at least one compartment.

[0075] During this insertion the module connector SSM of the power converter module **10***a* is connected to a switch connector SSC in the first printed circuit board PCB**1**. The switch connector SSC is further connected to a state switch SS provided in the first printed circuit board. The state switch SS may advantageously include a DIP switch which is arranged in a rear portion of the shelf device **20**.

[0076] The switch connector SSC is arranged in a rear portion of the at least one compartment in the shelf device **20**. The module connector SSM is arranged in a rear portion of the electric multi-mode power converter module **10***a* which is inserted in the compartment.

[0077] In a corresponding way, when the power converter module **10***a* is inserted in the compartment, the connector ASMout is connected to a connector ACSin provided at the first printed circuit board PCB**1**.

[0078] Also, when the power converter module **10***a* is inserted in the compartment, the connector ACMin is connected to a connector ACSin provided at the second printed circuit board PCB**2**. Further, the connector DCPM DCNN is connected to the connector DCS provided at the second printed circuit board PCB**2**, and the connector COMS is connected to the connector COMM provided at the second printed circuit board PCB**2**.

[0079] Corresponding connections are made between connectors on the rear side of the second power converter module **10***b* when it is inserted into the second compartment of the shelf device **20**, as has been schematically indicated by non-labeled arrows in FIG. **4**.

[0080] The resulting power system **1**, which includes the multi-mode power converter modules **10**, may be used either as an AC-UPS, or a DC-UPS, or both at the same time. The system is built with converter modules **10** which each may be configured to behave as a rectifier in a DC-UPS, or behave as an inverter in an AC-UPS. Each converter module **10** is programmed by an external HW switch (the hardware configuration port **62**) to provide any of the two functions, or both at the same time.

[0081] In some aspects of the presently disclosed power converter module and power supply system, the configuration of the power converter module is independent of the module itself. Rather, the configuration depends on the state of a hardware switch provided in a slot incorporated in the power shelf. The module is connected to the HW switch when it is inserted into its position in the power shelf. One connector in the rear of the module is then connecting to a mating connector in the power shelf. In this way it is determined if the power converter module is programmed to be a rectifier, an inverter, or both.

[0082] The invention provides a power converter module and a power supply system which may be reconfigured in an easy way if the required mode of operation needs to be changed. An example of such a need for changing the required mode of operation is if a provider of data center services wants to change the server equipment from a −48V fed server to a 230 VAC fed server.

[0083] Another example of the need for flexibility is that the data center host may not even know in advance, what equipment a potential customer prefers. The service provider needs therefore to be prepared for both type of power supply options, DC or AC. An advantage of the invention is that the power converter module and power supply system may be purchased and installed before the decision on whether AC or DC power should actually be used, may be made at a later point of time.

Example 1

[0084] In the first example, the power supply system **1** comprising several modules **10** is used to supply power from the AC mains to both a DC load and an AC load. The first AC port **32** is connected to the AC mains, the second AC port **42** is connected to the AC load and the DC port **52** is connected to the battery and the DC load (i.e. the battery is connected in parallel with the battery) outside of the module **10**. Here, the respective modules **10** are set in their third state by means of their respective hardware configuration ports.

[0085] As long as the AC mains is supplying power, the AC/DC converter will supply power to both the DC/DC converter and to the DC/AC converter. The DC/DC converter will supply power to the battery and the DC load, while the DC/AC converter will supply power to the AC load. The power flow in this situation is indicated in FIG. **5**.

[0086] In case the AC mains is not supplying power (AC mains failure), the DC/DC converter will supply power from the battery to the DC/AC converter and further to the AC load. The battery will supply power directly to the DC load. The power flow in this situation is indicated in FIG. **6**.

[0087] Example 1 is standard AC-UPS functionality.

Example 2

[0088] In the second example, the power supply system **1** comprising several modules **10** is used to supply power from a very weak or faulty AC mains to both a DC load and an AC load. With such an AC mains, there is an increased risk that voltage and/or current spikes may damage the converters or even the load (in particular the AC load, since galvanic insulation is only present in the DC/DC converter).

[0089] Here, half of the modules **10** are set in first state by means of their respective hardware configuration ports, and the remaining modules **10** are set in their second state by means of their respective hardware configuration ports. Consequently, when the AC net is supplying power, the AC/DC converter is supplying power to the battery and the DC load by means of the first half of the modules. The power flow in the first state is indicated in FIG. **7**.

[0090] The second half of the modules will use the DC/DC converter to supply power from the battery to the DC/AC converter and further to the AC load. The power flow in the second state is indicated in FIG. **8**. Hence, galvanic insulation between the AC mains and the AC load is achieved.

[0091] In case the AC mains is not supplying power (AC mains failure), the first half of modules will not do anything, while the second half of modules will continue as before by using battery power. The battery will supply power directly to the DC load.

Example 3

[0092] In the third example, the power supply system **1** comprising several modules **10** is used in a building, where the building is connected to the AC mains, but where the building also is equipped with a solar cell system (not shown). The solar cell system includes inverters (not shown)